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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/271,447

03/18/1999

HIROAKI SATOH

400113/SAHIN

4160

23548 7590 11/12/2003
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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 11/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/271,447

Applicant(s)

SATOH, HIROAKI

Examiner

Michael Cleveland

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/2/2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri (U.S. Patent 6,329,111, hereafter '111) in view of Taylor (U.S. Patent 5,371,148, hereafter '148), Tanaka et al. (U.S. Patent 5,858,616), and Lipson et al. (U.S. Patent 4,239,849, hereafter '849).

'111 teaches a process for forming a pattern of fluorescent substance into the cell of a fluorescent substance display substrate comprising providing in the cell two separate layers which are i) a resin composition layer (A, 7) and ii) a photosensitive (see col. 7, lines 1-10) composition layer (B, 8) (Fig. 4a-4b), exposing the layers to light, developing the layers, and baking the developed layers (col. 4, lines 18-39), wherein the resin composition (A) layer comprises an acrylic polymer (a, col. 10, lines 28-67) having a weight average molecular weight preferably in the range of 20,000-150,000 (col. 11, lines 26-36) and an acid number of 90-260 mgKOH/g (col. 11, lines 37-50), an ethylenically unsaturated compound (b, col. 11, line 63-col. 14, line 19) and a fluorescent substance (phosphor d, col. 16, lines 11-29) and the resin composition layer (7) is disposed between the inside of the cell (formed by substrate 1 and walls

2) and the photosensitive resin composition layer (8), as shown in Fig. 4B. The photosensitive composition may also contain a polymerization inhibitor (col. 23, lines 11-16).

'111 teaches that the resin composition layer also includes (c) a photoinitiator in order to aid in the photopolymerization. Thus, '111 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer, (b) the ethylenically unsaturated group, (d) the phosphor, and the polymerization inhibitor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with the addition of ethylenically unsaturated compounds and without the addition of photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the photoinitiator from the photopolymerizable composition of '111 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

Nojiri '111 and Taylor '148 are described above. '111 teaches that the viscosity of the photosensitive resin (A) should be $1-10^9$ Pa.s (col. 24, lines 27-34), but is silent as to the glass transition temperature. Thus, it does not teach a glass transition temperature of less than 30°C or not less than 30°C.

'616 teaches that the similar photosensitive phosphor-containing resins for application by laminating (see Fig. 3) It teaches identical viscosity ranges for the resin (col. 13, lines 31-40) to those of '111, and further teaches a preferred range of 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers or other components, such as plasticizers, with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer ('616, col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

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Nojiri '111, Taylor '148, and Tanaka '616 are silent as to the concentration of polymerization inhibitor, and therefore do not teach a concentration of 0.1-15 parts by weight/100 parts by weight of acrylic resin. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Lipson '849 teaches that in photopolymerizable compositions, polymerization inhibitors may be added in amounts of up to 5 parts by weight per 40-90 parts per weight of a binding agent which may be acrylic (col. 2, lines 1-23) (i.e., 0-12.5 parts by weight per 100 parts by weight of the binding agent). The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

4. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '616 in view of Taylor '148 and Koike et al. (U.S. Patent 5,922,395, hereafter '395) and Lipson '849.

Claims 1, 8, and 19: '616 teaches depositing a layer that is both a resin (A) composition layer (See col. 4, lines 36-45) and a photosensitive resin (B) composition layer (See col. 2, lines 26-62.) The resin composition includes (a) an acrylic resin is a copolymer with an acid value of 15-200 and a weight average molecular weight of 10,000-150,000 (col. 6, lines 46-59), (b) a phosphor (i.e., a fluorescent material) (col. 2, lines 26-34), and (c) an ethylenically unsaturated compound (col. 2, lines 53-61). The composition may contain a polymerization inhibitor (col. 13, lines 20-26). The composition is deposited in cells of a plasma display (col. 14, line 46-col. 15, line 7), exposed (col. 15, lines 8-50), developed (col. 15, lines 51-67), and baked (col. 16, lines 41-48; col. 17, lines 10-13).

The resin composition layer also includes an ethylenically unsaturated monomer and a photoinitiator in order to aid in the photopolymerization (col. 2, lines 53-61). Thus, '616 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer, (b) the phosphor, (c) the ethylenically unsaturated compound, and (d) the polymerization inhibitor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with the addition of ethylenically unsaturated compounds and without the addition of photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the photoinitiator from the photopolymerizable composition of '616 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

'616 and '148 do not teach the formation of separate layers, wherein a photosensitive layer (B) is formed after a resin composition layer (A) is formed.

Koike '935 teaches two equivalent embodiments of forming pigment layers for applications such as plasma display panels (col. 1, lines 7-9). In one (Figs. 1-2), a photosensitive pigment composition is deposited in the cells of the display panel, exposed and developed (col. 7, lines 8-29). In the other, a pigment composition layer (7) and a photoresist (i.e., a photosensitive resin) layer are applied. The photoresist layer is exposed, and both layers are developed (col. 8, line 42-col. 9, line 38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a photoresist layer, such as that of Koike '395's second embodiment, on top of the phosphor layer of Tanaka '616 before developing and exposure with the expectation of similar results because Koike '395 teaches the equivalence of depositing a photosensitive pigment layer, and depositing a pigment layer followed by a photoresist layer before development in the formation of plasma display panels.

The following comments refer to the teachings of '616:

Claims 20-22: The viscosity of the polymer composition is 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer (col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Koike '395, Taylor '148, and Tanaka '616 are silent as to the concentration of polymerization inhibitor, and therefore do not teach a concentration of 0.1-15 parts by weight/100 parts by weight of acrylic resin. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Lipson '849 teaches that in photopolymerizable compositions, polymerization inhibitors may be added in amounts of up to 5 parts by weight per 40-90 parts per weight of a binding agent which may be acrylic (col. 2, lines 1-23) (i.e., 0-12.5 parts by weight per 100 parts by weight of the binding agent). The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

Response to Arguments

5. Applicant's arguments filed 9/2/2003 have been fully considered but they are not persuasive.

Applicant argues that the present invention seeks to prevent photopolymerization of the resin composition layer (A) due to the migration of a photoinitiator from layer (B) into layer (A). The argument is unconvincing because it is not commensurate in scope with the claims, which do not require a photoinitiator in layer (B) and do not exclude the photopolymerization of layer (A). The argument is further unconvincing because the assertion in the specification is unclear and because it is not supported by evidence. The argument is further unconvincing because the claimed proportions significantly overlap the conventional amounts in which polymerization inhibitors are used. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Applicant argues that the cited prior art photopolymerizes resin layer A "in contrast to the presently claimed invention". The argument is incorrect because the claims do not exclude the photopolymerization of layer (A). Furthermore, the arguments are contradicted by the

specification which details the inclusion of a photopolymerization initiator and/or initiator assistant within resin (A) (p. 8, line 23-p. 9, line 22), thereby indicating that Applicant *does* photopolymerize the layer.

Applicant argues that the polymerization inhibitor of Nojiri '111 and Tanaka '616 is intended to be added in an extremely small amount for storage stability of the resin layer. The argument is unconvincing because '849 teaches that the conventional amount significantly overlaps Applicant's claimed range of amounts. The examiner further notes that the specifically listed inhibitors of include 2,2-methylenebis(4-ethyl-6-t-butylphenol) and substituted hydroquinones (col. 5, lines 38-50), two of Applicant's three exemplary inhibitors.

Applicant argues that Nojiri '111 and Tanaka '616 suggest placing the inhibitor in the photosensitive layer, rather than layer (A). The argument is unconvincing because the claims do not exclude layer (A) from being photosensitive.

Applicant also states that regarding the Declaration "the experimental results are the same whether a polymerization inhibitor (d) is used or not." The argument is unconvincing because it is unsupported by evidence. However, even if Applicant shows that the assertion is correct, the declaration is also not commensurate in scope with the claims at least because the claimed process is not limited to the particular compositions of layers (A) and (B) and the particular treatment conditions. Furthermore, the examiner notes that Applicant's statement regarding the Declaration directly contradicts Applicant's assertion that "a critical aspect of the presently claimed invention is that a specified amount of polymerization inhibitor is used in layer (A)." (p. 5, second full paragraph).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (703) 308-2331. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 306-3186 for regular communications and (703) 306-3186 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Michael Cleveland
Patent Examiner
November 6, 2003